

# W5YI

America's Oldest Ham Radio Newsletter

## REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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## United Kingdom Looks Ahead to Ham Radio Without Morse Exams

"Our hobby is in need of stimulation. The numbers of radio amateurs are falling in many parts of the world and this trend is an unhealthy one for the future of amateur radio. We must be seen as progressive and forward looking."

[From 1998 RSGB policy statement.]

Nearly two years ago, the Radio Society of Great Britain shocked the Amateur Radio world by publicly taking the position that Morse code communications and examinations were out of step with modern technology. The RSGB is the national Amateur Radio society in Great Britain.

It said that although "Amateur Radio is one hundred years old ...and the technology used has changed dramatically during that period, with a multitude of new techniques, in some other respects there has been little change." It was referring to the need to demonstrate Morse code proficiency as a requirement for operating on the long range HF bands.

The RSGB leadership said that it would be opening discussions with their telecom regulator, the *Radiocommunications Agency* to begin a process of liberalizing access to the HF amateur bands.

The RSGB acknowledged that although "...the maintenance of Morse as a mandatory requirement for access to the HF bands is IARU policy "...the society's Board of Directors ...believes that this position cannot be sustained in the longer term." It said it also "...would be opening discussions with IARU societies and other interested bodies to recon-

sider the position to be adopted at the next World Radio Conference ...when the matter of Morse as a necessary qualifier for access to HF bands is likely to be considered."

At both the IARU Region 1 Conference held a year ago in Lillehammer, Norway and at the recently concluded IARU Region 3 Conference, the RSGB made its pitch for the eventual elimination of Morse testing in the Amateur Service. In IARU Region 3, the ARRL was the lone objector.

The RSGB said while it wanted to see Morse "...preserved as a core element of amateur radio globally..." it felt that "...Morse is but one mode among many in current use, and it should take its place alongside the others as an equal. ...Also under discussion are proposals that might lead towards an acceptable system of progressive licensing."

Its Board said it was well aware of the strength of feeling about this issue. "Morse has many advantages, including spectrum utilization, relative simplicity of equipment and cost."

The RSGB policy statement on Morse code is published on their website: Follows are some excerpts:



## RSGB POLICY ON MORSE TESTING

"Today, Morse is but one of many modes used by radio amateurs. Furthermore, commercial stations have virtually withdrawn the capacity to transmit in Morse, and it is now extremely unlikely that any case of interference would be addressed by a request, sent in Morse code, to cease transmitting.

"The appropriateness of Morse code as a pre-requisite to gaining access to the Amateur HF bands is therefore open to question. The Society's understanding is that at a future World Radio Conference, national administrations will find it hard to argue for retaining the current international agreement that Morse competence shall be universally required for HF band operation by radio amateurs. ...For it to continue to attract the younger generation, amateur radio should be seen as a progressive, exciting and forward looking hobby.

"The Society believes that Morse can not longer be justified as a relevant pre-condition for access to the HF bands in the longer term. However, it will continue to exist as an important mode for radio amateurs ...."

"The Society's current view is that the structure of amateur radio licensing in the UK should, in due course, be amended to a system of progressive or incentive licensing, thus making a range of facilities available based on a combination of qualifications in technical knowledge, license regulation knowledge and operating skills."

## UK regulatory agency releases discussion paper

Headquartered in London, England, the United Kingdom's Radiocommunications Agency (RA) is similar to the USA's Federal Communication Commission. The RA is responsible for managing most non-military radio spectrum in the UK and for representing the UK in international meetings on radio. The Agency is part of DTI, the Department of Trade and Industry.

On September 22, 2000, the RA released the following *Consultation Document* concerning their Amateur Service. A *Consultation Document* is a discussion paper ...similar to our *Notice of Inquiry*. That is, it seeks information from the public. This discussion paper anticipates the removal of the Morse requirement at the next World Radio Conference for access to HF bands. Its text reads:

### "PROPOSED FUTURE STRUCTURE OF AMATEUR RADIO LICENSING

"If amateur radio is to survive, we need to encourage more people, particularly youngsters, into the hobby. The Agency believes that there should be a relatively simple entry point into amateur radio to get people started (a Foundation Licence).

"This entry point would require minimal qualifications and allow newcomers a first taste of amateur radio. Our

initial thoughts are that applicants will need to have completed a short competence based practical course which would cover the basics of amateur radio; safety, operating techniques (including on-air training under direct supervision), basic licence conditions and basic technical knowledge.

"At the end of the course, a simple multiple choice examination would be conducted by the course tutor. Ideally these courses would be run through approved amateur radio clubs.

"As qualifications are minimal, operation would be limited to the VHF amateur bands and only commercially produced equipment would be permitted. Power would be limited [25W erp] with antennas restricted to omnidirectional dipoles.

"The use of all current permitted facilities and operational modes would be allowed. Consideration was given to making this a short term license, meaning that after three years the individual would be required to move on to the next level.

However, this idea was rejected because it was felt that it was better to keep people in the hobby rather than forcing them to give up if they did not wish to progress to a more advanced level. It should also be recognized that amateur radio should provide an element of choice and some people may be quite happy to stay at this basic level.

"We feel that there should be a more incentive based licensing system to encourage radio amateurs to develop their skills by linking license privileges with qualifications held. While we could introduce a Foundation License at any time, further restructuring of the Amateur Service will need to be postponed until a decision has been reached on the Morse issue.

"This is due to be discussed at the 2002 World Radio Conference where it is likely that the international requirement for users of frequencies below 30 MHz to prove that they can send and receive Morse code signals correctly, will be dropped.

"This will allow the UK to decide whether or not a Morse test is relevant as a qualification for HF operation.

"If the mandatory knowledge of Morse was to be dropped in the UK, we could introduce three levels of license; the Foundation, Intermediate and Advanced.

"All would require the basic competence course while the Intermediate and Advanced would require additional qualifications. Providing there are sufficient call signs we would prefer to retain different call signs for each license class.

"It would be necessary to transfer existing licensees into the new classes and there is a natural progression path from the current Novice to the new Intermediate and from the current Full to the new Advanced Licenses.

"The table below summarizes this progression:



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Current License Class	New License Class
Full Class A	Advanced
Full Class A/B	Advanced
Full Class B	Advanced
Novice Class A	Intermediate
Novice Class B	Intermediate - Foundation

"These are very much initial thoughts and we are currently working with the RSGB to develop these ideas. We would be interested to hear from licensees on whether they agree with our initial thoughts or whether you have ideas of your own. Please let us know by e-mail to [amcb@ra.gsi.gov.uk](mailto:amcb@ra.gsi.gov.uk) or by writing to the Amateur Radio Section, Radiocommunications Agency, Wyndham House, Marsh Wall, London E14 9SX.

"You may also wish to look at the RSGB's initial proposals and these can be found at: <http://www.rsgb.org/>

## MORE ON THE NEW "MULTI-USE RADIO SERVICE"

Readers have expressed a lot of interest in the new Multi-Use Radio Service or MURS. Some wanted to know how this new CB service which permits unlicensed VHF 2-watt (150-MHz) operation came into being since practically no one knew it was coming or were given the opportunity to comment on the rulemaking.

Actually MURS went through more than 2 years of intensive rulemaking. And the concept actually started some 5 years ago when frequencies were allocated for low power use in the *Business Radio Service* (1995 "Refarming" Report and Order.) The issue of an unlicensed non-coordinated radio service was later incorporated into the 1998 *Biennial Regulatory Review* of the (Part 90) Private Land Mobile Radio Services (PLMRS).

It escaped most radio enthusiasts since it was Business Band and not CB or Amateur Radio oriented. They shouldn't feel bad, however, since most radio equipment manufacturers were also blind-sided by MURS. And it may not be too long before you see ICOM, Kenwood, Yaesu and Alinco MURS hand helds in hobby radio stores. Motorola and Radio Shack were well aware of the proceeding, however.

Remember that when CB started in the 1950's, its objective was to allow businesses to have a way to communicate between their main office and their on-the-road service vehicles. It was very high tech and fashionable back then to have a "radio controlled" sign splashed on the side of the truck.

MURS has a similar goal. The idea is for construction workers and other service personnel to have a way to communicate short range among themselves. Actually most users never bothered with the licensing function.

They just bought and used the radios.

In WT Docket No. 97-153 - the so-called *Part 90 Omnibus NPRM* -- (Adopted January 28, 1999, Released February 19, 1999) the FCC exempted five Part 90 frequencies from the frequency coordination requirement of §90.175 of the Rules.

Two of the frequencies, 154.570 MHz and 154.600 MHz, were commonly referred to as "color dot" frequencies in the PLMR community. The 154.570 MHz radio was frequently identified with a blue dot, 154.600 MHz) had a red dot. These entry-level, low power hand-held NBFM radios were extremely popular because of their low cost. The other three coordination exempted frequencies are 151.820 MHz, 151.880 MHz, and 151.940 MHz.

## The Notice of Proposed Rulemaking

The objective of WT Docket No. 98-182 (a *Notice of Proposed Rulemaking*) was to complete a comprehensive review of the PLMR (business band) Service and to revise various procedures and policies. One of the things the FCC wanted to know was whether they should go ahead with a utilitarian unlicensed VHF radio service.

The September 1998 NPRM stated "These five frequencies are licensed as mobile frequencies and the station license, therefore, does not contain station coordinates. We stated that frequency coordination for these frequencies no longer serves a regulatory purpose, particularly given that the frequency coordinator does not know the precise location of the user. Thus, the combination of two circumstances:

- (1) the existence of our current proposal to eliminate the coordination requirement for these frequencies; and
- (2) the claim that most users of these frequencies probably are not licensed,

cause us now to invite comments on whether these five frequencies should be further deregulated by eliminating the requirement that they be licensed.

"Should we decide to take this action, we would reallocate the frequencies from Part 90 to a radio service that does not require licensing, such as the Citizens Band, Low Power Radio, or the Family Radio Service.

"We invite comments on the effect such a reallocation would have on existing Part 90 licensees of these frequencies. We also invite comments on whether there are other frequencies in Part 90 for which we could eliminate the licensing requirement."

## The Report and Order

The *Report and Order* on WT Docket No. 98-182 was adopted on June 28, 2000 (released: July 12, 2000.) The R&O basically adopted the changes that were proposed in the September 1998 Part 90 NPRM including the reassignment of the five low power VHF frequencies



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identified in the *Notice* from the Part 90 Private Land Mobile Radio (PLMR) Services to the Part 95 Citizens Band Radio Service, and elimination of the licensing requirement for these frequencies.

The FCC said in the *Order* that "Traditionally, the PLMR services have provided for the private, internal communications needs of public safety entities, state and local government entities, large and small businesses, transportation providers, the medical community, and other diverse users of two-way radio systems." There was no mention of personal or hobby radio.

Another quote from the *Order*: "In the *Notice*, we invited comments on whether five "color-dot" frequencies should be reallocated from the Part 90 Private Land Mobile Radio Services to one of the Citizens Band Radio (CB) Services in Part 95 (such as the Low Power Radio Service, LPRS).

## The Multi-Use Radio Service is born

"After reviewing the record," FCC said, "we conclude that the licensing requirement for the five low power VHF frequencies identified in the *Notice* should be eliminated and these frequencies reallocated from Part 90 to one of the CB services in Part 95. All comments support our proposal. We agree with the commenters that because of the manner in which manufacturers have chosen to market radios that operate on these frequencies and our elimination of the frequency coordination requirements on the low power frequencies, it would be in the public interest to eliminate the licensing requirement for them.

"Two of the three existing CB services, CB Radio and Family Radio, only allow voice communications. The third, LPRS (Low Power Radio Service), prohibits two-way voice communications. The color-dot frequencies, on the other hand, are intended for voice, data, and imaging. Therefore, we are following the suggestion of Motorola and Tandy (Radio Shack) by placing these frequencies in a new radio service category in the CB services, to be called the Multi-Use Radio Service (MURS).

"For consistency and ease of use and administration, we will also allow 2 watt operation on all of the frequencies, including those for which operation only at 1 watt is currently permitted."

Motorola wanted four additional UHF frequencies (467.850 MHz, 467.875 MHz, 467.900 MHz and 467.925 MHz) relocated to unlicensed low power use. Motorola said "These four frequencies have been serving low-tier business needs for several decades." And Tandy/Radio Shack requested four more 150-MHz frequencies be added to the list which it said "...are already commonly included on currently available business band radios."

Business band user groups generally opposed further expansion beyond the five channels adding that this reallocation "...should not serve as a precedent for turn-

ing other PLMR spectrum into unlicensed spectrum" and "...further erosion of critical PLMR spectrum must be avoided in the future."

The Commission acknowledged the differing views and decided there was not sufficient support to justify re-allocation of additional Part 90 frequencies at this time. But the FCC could expand MURS if it proves popular. It said "We may revisit this issue at a later date should additional support develop." Only the five frequencies listed in the original proposal are included in the new Multi-Use Radio Service (MURS.)

The 150.8 to 152 MHz band, which previously was allocated only to Part 90 PLMS use, was expanded to include Personal Radio use under Part 95.

## New Part 95 PERSONAL RADIO SERVICES Rules

...take effect 30 days after publishing in the Federal Register which is expected this month (October 2000.) At that time, the Part 95 Rules will be amended as follows:

### 95.401 (CB Rule 1)

What are the Citizens Band Radio Services?

(e) The Multi-Use Radio Service (MURS)--a private, two-way, short-distance voice, data or image communications service for personal or business activities of the general public.

### 95.601 Basis and purpose.

Subpart J - Multi-Use Radio Service (MURS)

### 95.603 Certification required.

(g) Each Multi-Use Radio Service transmitter (a transmitter that operates or is intended to operate in the MURS) must be certified in accordance with §90.203 of this chapter.

### 95.605 Certification procedures.

Any entity may request certification for its transmitter when the transmitter is used in the GMRS, FRS, R/C, CB, IVDS, LPRS, MURS, or MICS following the procedures in part 2 of this chapter.

### 95.631 Emission types.

(i) A MURS station may transmit any emission type as specified in §90.207 of this Chapter.

### 95.632 MURS transmitter frequencies.

(a) The MURS transmitter channel frequencies are 151.820 MHz, 151.880 MHz, 151.940 MHz, 154.570 MHz, 154.600 MHz.

(b) The authorized bandwidth is 11.25 kHz on frequencies 151.820 MHz, 151.880 MHz and 151.940 MHz. The authorized bandwidth is 12.5 kHz on frequencies 154.570 and 154.600 kHz. 30.

(c) MURS transmitters must maintain a frequency stability of 5.0 ppm, or 2.0 ppm if designed to operate with a 6.25 kHz bandwidth.

### 95.633 Emission bandwidth.

(f) The authorized bandwidth for any emission type transmitted by a MURS transmitter is specified in §90.209 of this Chapter.

### 95.635 Unwanted radiation.



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(e) For transmitters designed to operate in the MURS, transmitters shall comply with §90.210 of this chapter.

## 95.639 Maximum transmitter power.

(g) No MURS unit, under any condition of modulation, shall exceed 2 W effective radiated power (ERP).

## 95.649 Power capability

No CB, R/C, LPRS, FRS, MICS, MURS or WMTS unit shall incorporate provisions for increasing its transmitter power to any level in excess of the limits specified in §95.639.

## 95.651 Crystal control required.

All transmitters used in the Personal Radio Services must be crystal controlled, except an R/C station that transmits in the 26-27 MHz frequency band, a FRS unit, a LPRS unit, a MURS unit, a MICS transmitter, or a WMTS unit.

## 95.1301 Eligibility.

An entity is authorized by rule to operate a MURS transmitter if it is not a foreign government or a representative of a foreign government and if it uses the transmitter in accordance with 95.1109 and otherwise operates in accordance with the rules contained in this subpart. No license will be issued.

## 95.1303 Authorized locations.

(a) MURS operation is authorized:

- (1) Anywhere CB station operation is permitted under §95.405; and
- (2) Aboard any vessel of the United States, with the permission of the captain, while the vessel is traveling either domestically or in international waters.

(b) MURS operation is not authorized aboard aircraft in flight.

(c) Anyone intending to operate a MURS unit on the islands of Puerto Rico, Desecheo, Mona, Vieques, and Culebra in a manner that could pose an interference threat to the Arecibo Observatory...

## 95.1305 Station identification.

A MURS station is not required to transmit a station identification announcement.

## 95.1307 Permissible communications.

- (a) MURS stations may transmit voice, data or image signals as permitted in this subpart.
- (b) A MURS station may transmit any emission type, subject to the limitations contained in §90.207 of this Chapter.
- (c) MURS frequencies may be used for remote control and telemetering functions. Emission types A1D, A2D, F1D, F2D are authorized and stations used to control remote objects or devices may be operated on the continuous carrier transmit mode, except on frequency 154.600 MHz.

## §95.1309 Channel use policy.

- (a) The channels authorized to MURS systems by this part are available on a shared basis only and will not be assigned for the exclusive use of any entity.
- (b) Those using MURS transmitters must cooperate in the selection and use of channels in order to reduce interference and make the most effective use of authorized facilities. Channels must be selected in an effort to avoid interference to other MURS transmissions.

## AMATEUR RADIO STATION CALL SIGNS

...sequentially issued as of the first of September 2000:

Radio District	Group A Extra	Group B Advanced	Group C Tech/Gen.	Group D Novice
0 (*)	AB0PA	KI0RX	(***)	KC0IXT
1 (*)	AA1XB	KE1LY	(***)	KB1FSW
2 (*)	AB2RE	KG2RM	(***)	KC2GZB
3 (*)	AA3VX	KF3DZ	(***)	KB3FNP
4 (*)	AG4CS	KV4FH	(***)	KG4JUR
5 (*)	AD5AQ	KM5XF	(***)	KD5LUL
6 (*)	AD6TC	KR6ER	(***)	KG6DME
7 (*)	AC7JR	KK7WO	(***)	KD7KNQ
8 (*)	AB8IW	KI8JX	(***)	KC8PMO
9 (*)	AB9AK	KG9RA	(***)	KB9YCQ
N. Mariana	NH0Z	AH0BB	KH0LM	WH0ABP
Guam	(**)	AH2DN	KH2UZ	WH2ANX
Hawaii	(**)	AH6QP	(***)	WH6DGJ
Am.Samoa	AH8T	AH8AI	KH8DO	WH8ABF
Alaska	(**)	AL7RR	KL0YQ	WL7CVE
Virgin Isl.	(**)	KP2CP	NP2LF	WP2AIN
Puerto Rico	WP3J	KP3BL	WP3IF	WP4NOT

\* = All 1-by-2 & 2-by-1 call signs have been assigned.

\*\* = All 2-by-1 call signs have been assigned.

\*\*\* = Group "C" (N-by-3) have been assigned.

**Note:** New prefix numerals now being assigned in Puerto Rico (KP3/NP3/WP3), Hawaii (AH7/KH7) and Alaska (AL0/KL0)

[Source: FCC Amateur Service Database, Washington, DC]

## PHASE 3D HAMSAT SET FOR HALLOWEEN LAUNCH

The European space agency, Arianespace has set October 31 as the liftoff date for its next Ariane 5 mission (designated Flight 135.) According to the AMSAT News Service, if the countdown goes as planned, P-3D will fly on Halloween from Kourou, French Guiana.

Flight 135 will carry the PanAmSat PAS 1R telecommunications satellite and three piggyback secondary payloads: AMSAT P3D being one of them. This mission will be the first use of the ASAP-5 (Ariane Structure for Auxiliary Payloads) platform, which carries mini-or micro-satellites as secondary payloads into orbit.

The RUDAK team, the RF team and members of the electronics team from AMSAT-NA have returned home after completing their work. The electronics team members from Europe are also preparing to leave as their portion of the launch preparation work is likewise complete. Final tests have been made on P-3D and all has been declared well and ready to "go."

AMSAT reminds satellite operators planning to use Phase 3D after launch that it could be a few months after launch before the bird is ready for standard operation.

Follow the countdown at <www.arianespace.com> <www.amsat.org> and <www.amsat-dl.org>



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## CUTTING EDGE TECHNOLOGY

■ **DVD, which once stood for digital video disk or digital versatile disk, is the next generation of optical disc storage technology.** It's essentially a bigger, faster CD that can hold movie-like video, better-than-CD audio, and computer data. DVD aims to encompass home entertainment, computers, and business information with a single digital format, eventually replacing audio CD, videotape, laserdisc, CD-ROM, and video game cartridges.

DVD has widespread support from all major electronics companies, all major computer hardware companies, and all major movie and music studios. With this unprecedented support, DVD has become the most successful consumer electronics product of all time in less than three years since its introduction.

According to the International Recording Media Association, DVD video duplication more than doubled this year, climbing from 194 million discs manufactured world-wide in 1999 to 474 million discs in 2000. And according to the Consumer Electronics Association, more than half a million DVD players are sold in the U.S. every month!

■ **No-battery flashlight. Applied Innovating Technologies has come up with a novel concept -- a flashlight that uses no batteries.** Just shake the device for a few seconds for several minutes' worth of visible light. What makes the NightStar device different from ordinary flashlights is its use of a high-intensity white light-emitting diode (LED) instead of an incandescent bulb, for much lower current draw. The batteries have been replaced by a multi-magnet system. When you shake the NightStar, the high-power magnet travels back and forth through a coil of wire. What happens when a magnet travels through a coil of wire? Right. You get electricity. A capacitor stores this charge, then passes it on to the LED. 30 seconds of shaking gets you at least five minutes of light. Magnets at each end of the charging magnet's path smooth out its motion. NightStar weighs less than a pound and is rated for 100,000 hours of use, throwing out as much as 10 lumens of light.

## EMERGING COMMUNICATIONS

■ **Does "phone-squatting" equal "cybersquatting"?** Enterprising computerists have been registering Internet domain names that match the names of large corporations, hoping to charge those companies huge amounts of money for the rights to use them. Trying to get a toll-free telephone number whose alphanumeric digits match those of a particular company or title may be more difficult, because phone numbers have been around much longer than the Internet has. It's possible to get a 'Net domain name registered, only to then find out that some other company has the desired phone number (such as 1-800-GET-COKE). But beginning this month, at least one Internet company will allow customers to find out if matching toll-free numbers are available with domain names, and will let them register both if they are.

■ **Fiber-optic cable is still more expensive to install than copper cable.** How can this be? Data rates are incredibly faster, there's no crosstalk, and fiber carries far more data at once. But in the long run, you have to look at the labor charges during installation. Anyone can shove a copper cable down a pipe. But not everyone has the know-how to handle a fiber-optic bundle with care, and splice whatever breaks may occur while putting it in. The equipment and people capable of that cost more.

■ **Will people read the news on their cell phones or Personal Digital Assistants?** The New York Times thinks so. They are launching their NYT Mobile 24-hour news, information and entertainment service. Sprint's PCS group will provide the content on its wireless Web browser or Internet-ready phones.

And YadaYada is a new web portal for wireless Internet users. It lets you access your favorite Web sites as Yada Channels on your PDA. See: <<http://www.yadayada.com>>

■ **Adding web access to cellular phones will be big business!** Motorola is working on a "smart phone" for early 2002 release that will serve as a wireless Internet device, phone and personal organizer. And Nokia, Casio, Ericsson and Microsoft are working on similar devices to take and make phone calls while jotting

down notes, addresses and phone numbers and e-mails.

■ The Boston-based Yankee Group estimates **there will be more than 1 billion Web-enabled mobile devices worldwide by 2003**, generating nearly two-thirds of all Web transactions. Research firms predict such wireless devices are likely to replace the desktop computer as the principal means of Internet communication, but that a winning compromise between size, shape and other features has yet to be determined.

No one knows whether the tablet form (of an organizer), with its larger screen, may be more agreeable to people than adding (an organizer) to a cell phone.

## COMPUTER INFO

■ **PDAs (Personal Digital Assistants) are battery operated handheld organizers** (in the \$200- \$400 price range) that fit into your shirt or jacket pocket. Weighing about 6-ounces, they have small touch-sensitive screens and no keyboard. You use a stylus to navigate the software and to enter data via tappable menus.

All palmtop PDAs offer some form of handwriting recognition which turns pen strokes into numbers and letters, or you can tap away at a tiny on-screen keyboard image. PDAs have infrared ports that allow you to swap data to and from your desktop PC and other devices.

Most run the Microsoft "Pocket PC" or Palm operating system. Market leader is Palm Computing ...although there are "clones" such as the Handspring Visor which has a built-in microphone.

■ **Telephone calls from your PDA are on the way!** The Handspring Visor features an expansion slot on the back of the unit which allows the user to swap different modules in and out of the product. This feature allows the Visor to enable a variety of different products and technologies, including games, paging, MP3 player, GPS receiver, high-speed data, streaming multimedia, email, web browsing, two-way messaging ...even a voice telephony! This slot, called "Springboard", effectively allows the user to turn the Visor into a customized unit.

For example: Handspring's Visor-Phone is an add-on cartridge to the Visor electronic organizer. With an earphone jack attached, users can perform many of



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the same functions possible with a cell phone while also linking with phone numbers, notes and other data contained within the personal digital assistant.

The VisorPhone will also allow users to connect to the Web. So-called "Third Generation" or "3G" wireless technology is expected to offer speeds up to 6 1/2 times faster than a standard telephone connection.

■ **Surf the web from the back yard!** High tech giant Sony has introduced the wireless **Airboard** in Japan, a hybrid wireless Web-surfing device and television that also acts as a remote control for other household electronics.

The Airboard consists of a portable LCD display that connects to a base station using a TV antenna and wireless modem. The slim 10-inch flat panel LCD display has a touchpad screen. It permits users to watch TV, surf the Web, send e-mail and control any appliance, such as a CD player or DVD player, that has been plugged into the base station without a keyboard.

The Airboard enables users to access information from anywhere without using a PC. The cost is high - about \$1,100. The gadget appears to be the video answer to the audio Walkman personal stereo which Sony also invented.

■ **Add Sony's new PlayStation 2 video game console to the list of Christmas toys that kids will be wanting, but parents won't be able to get!** It will be in short supply during the Christmas selling season due to component shortages. As a result, Sony is scaling back deliveries to North America by 50 percent. But there still be will more than a million units available during the holiday season. Demand will far exceed supply and reduced availability is sending large toy and electronics chains into "panic mode."

It was supposed to hit store shelves on October 26<sup>th</sup>. But in many cases it won't because many outlets have presold the console. The \$299 price tag is the same as that of the original PlayStation when it was released in 1995.

We heard that Circuit City and Best Buy have the biggest allotments of the new "Model 2" and neither has presold the game console so they will at least have product to sell. It will be first come-first served, so start camping on their doorstep if you want one. There may be a line! Toys "R" Us also has a large allotment, but will have few to sell even though they stopped preselling months ago.

The new model is a hot seller in Japan where thousands of people lined up outside stores in Tokyo to get one with most shops selling out within an hour. Its big draw is that the new machine can also play DVD movies and compact discs, has stereo-quality sound, offers faster game playing speeds, better picture quality and can connect to the Internet.

More than 50 software titles will be available in time for the holidays. Retail will be around \$49, again, the same price that PlayStation games carried in 1995. Sony kicks off its massive marketing campaign this month.

■ **Some car manufacturers are going back to using twisted-pair wiring in new vehicles.** It's cheaper and lighter than shielded coax cable. It also prevents unwanted trigger signals in certain automotive applications, such as air bags. Twisting the wires just the right amount is paramount if electrical noise is to be reduced or eliminated. Once that twist pitch is calculated, engineers can then determine in advance exactly how much wire will be needed for a particular car. If the pitch of the twist in the wire is off even just a little, it not only can allow RFI into the electrical system, but it can also allow too much wire to be installed, thus increasing weight. Twisting wires shortens their length, and this amount is calculated before installation.

■ **Windows 2000 bug fixes available.** Computer users now take it for granted that each new Microsoft Windows upgrade will itself need to be upgraded shortly thereafter to fix all of its programming errors, or "bugs." Windows 2000 is itself so large that it's practically impossible to eliminate all of the bugs before shipment, even with thousands of beta testers helping to track down potential programming flaws. Win2k was barely five months old before the first service pack was posted on Microsoft's Web site.

## INTERNET NEWS

■ **Is the public ready for the home delivery of groceries bought over the Internet? Maybe not.** Louis Borders (of Borders bookstore fame) has been replaced as CEO at Webvan - the Internet grocery firm that he founded three years ago. The firm is being merged with arch-rival HomeGrocer.com. Webvan raised \$805 million in startup funding less than a year ago and has been going through its

cash quickly. It's goal was to be a coast-to-coast alternative to bricks-and-mortar supermarket shopping but has now postponed further expansion. It lost \$74.4 million on second quarter revenues of \$28.3 million. Webvan's stock was selling for \$34.00 last November. It is now down to less than \$3.00 a 90 percent drop!

■ **Are you frustrated trying to get answers to your technical support questions.** Try asking a question on any subject (not just technical stuff) at <http://www.allexperts.com>. You just indicate which category you're interested in, then select a volunteer, based upon his or her profile, and e-mail your question. You get your answer free of charge -- usually within 48 hours. Allexperts has assembled a group of experts on a huge variety of topics. The volunteers are grouped by general topic, and then by specifics. When you get to the area dealing with your question, there's a brief statement by the volunteer for that topic about his or her background and level of expertise. The advertising-supported site is the brainchild of lawyer Steve Gordon, 32, who has degrees from both Yale and Harvard.

## WASHINGTON WHISPERS

■ **Congress is still trying to improve enforcement of the Citizen's Band (CB) Radio Service.** The major problem is harmful interference to nearby users of consumer telephones and televisions.

Introduced last year by Rep. Vernon Ehlers (R-Mich.), H.R. 2346 seeks to delegate authority to State and local governments to enact and enforce laws requiring users of CB radios to comply with FCC rules. It adds a new paragraph F to Section 302 of the Communications Act. Ehlers, by the way, holds a Ph.D in nuclear physics!

The bill contends that the FCC has stated that CB violations will only be investigated as time and manpower permit on a low priority basis and that "Many people believe that the FCC has not given the problem and the nuisances that rogue operators create significant priority and resources." The bills supporters believe that State and local government action will complement the FCC in enforcing its rules.

Similar bills have been introduced into both the Senate and House of Representatives before without success. No hearings were held on H.R. 2346 but on Septem-



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ber 22, 2000, the bill was reported out of the House Commerce Committee and prepared for possible floor action.

The proposed bill only impacts "citizens band radio equipment not authorized by the Commission" and "unauthorized operation of citizens band radio equipment on a frequency between 24 MHz and 35 MHz." The bill specifically states that other licensed radio services (such as Amateur Radio) "shall not be subject to action by a State or local government under this subsection."

The FCC is also required to "provide technical guidance to State and local governments regarding the detection and determination of violations...."

"If the Commission determines that a State or local government has acted outside its authority in enforcing a statute or ordinance, the Commission shall preempt the decision enforcing the statute or ordinance."

## AMATEUR RADIO ENFORCEMENT

■ **Kean C. Aw previously KG6APA (Santa Clara, CA)** had his Amateur Radio license set aside because he began repeater operation on March 11, 2000 in advance of his March 16 license grant. He apologized for his operation and said that he was not aware that there was no reciprocal operating arrangements between Malaysia, his country of citizenship. On May 24, the FCC requested that he furnish a copy of his Malaysian Amateur Radio license. When it was not received, the FCC canceled his KG6APA license. He has now submitted the Malaysian license information and the FCC has authorized Kean Aw to reapply for a U.S. Amateur Radio license "...but you may not operate on the basis of your Malaysian license or in advance of your U.S. license grant."

■ **The Friendly Tree Services Company of Orange, N.J.** has been warned that the FCC has information that it is "operating transmitting equipment on Amateur frequencies (144.085 MHz) without a license." **Inland Materials, Inc., (Casselberry, FL)** was also warned for suspected unlicensed operation on Amateur frequency, 438.537. Both firms were warned that continued operation will result in a fine (normally in the range of \$7,500 to \$10,000) and will jeopardize any FCC license the firms now hold. They were instructed to contact the FCC within ten days.

■ **AT&T Wireless PCS service (Washington, DC)** was notified by the FCC that their KNLF245 system located in Newport News, Virginia "may be causing harmful interference to Amateur Radio repeater system KA4VXR." They were instructed to contact the repeater owner "within ten days to explore a solution to the problem."

■ **Sam Jacobs (K3SAM) of Latrobe, PA** has had his "J and D Club" call sign application for KB3FGX dismissed (canceled) by the FCC. Both club trustees listed on the application have resigned and the purported club vice president said he was not affiliated with the club. The FCC said they had received complaints that the real purpose of the club was to harass other Amateur operators. The FCC has sent Jacobs a letter asking him to respond to certain information regarding the "J and D Club" within 20 days. The FCC is considering enforcement action and is evaluating whether Jacobs is qualified to hold an Amateur Radio license.

■ **The station callsign of Wade P. Norris KB5YHR (Duncan, OK)** has been heard on 7.253 MHz - a 40-meter frequency not authorized to Technician Class operators. The FCC warned Norris that such operation could lead to license revocation, a monetary fine and also jeopardize any future attempts to obtain an upgraded Amateur Radio license. Information has it that Norris altered his Technician Class license so that it appears to bear General Class privileges. He was asked to respond to these allegations within 20 days.

■ **The renewal application of Angos Winke KC6OKA (Los Angeles, CA)** has been held up pending a response from Winke concerning the coordination status of his 145.46 repeater. The coordinator (Two-Meter Spectrum Management Association, Tasma) states that the repeater was denied coordination on the basis that the frequency was coordinated only for low power operation to preclude any problems with radio operations in Mexico. Winke's repeater operations is reportedly causing interference to a Mexican repeater system. The FCC wants additional information on the operation of KC6OKA/K6PYP repeater. "Failure to respond will result in the dismissal of the renewal application."

■ **The FCC has again written the Tucker family of LaMirada, CA** concerning 36 club call signs held by family members. The family has not provided

requested documentation to the FCC supporting the existence of these clubs. The FCC proposed to consolidate the club station call signs held by the Tucker family and (on November 3, 1999) said that if no response was received within 20 days, it would adjust the Tucker family club call sign holdings accordingly. Responses were received, but some were not clear. As a result, the FCC consolidated the club call signs held by Roy N6TK and Kathryn Tucker AA6TK according to their plan. The club calls held by Eric AA6ET, Kent AA6KT and Nancy W5NAN were consolidated according to their proposals.

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STOA stands for the **"Scientific and Technological Options Assessment"** agency. Established in 1987 and headquartered in Luxembourg, it is an official and little known technology research agency of the European Parliament.

The STOA Panel is charged with scrutinizing the impact of science and technology on various social, political, environmental and economic issues. Its reports are published in eleven languages.

Subjects of their studies, determined by an annual Workplan, involve such routine subjects as water quality, nuclear safety, pollution, disposal of hazardous waste and such. Their research reports, primarily contracted to outside experts, are used to provide objective, comprehensive and independent assessments for European legislators and policy makers.

The European Parliament consists of more than 600 members from fifteen different European countries ...primarily from Germany, Italy, France, the United Kingdom and Spain.

A recent study published by STOA is entitled **"Interception Capabilities 2000."** It is a brutally frank and in depth study of how various nations of the world obtain information about what foreign governments and organizations are doing. We found the technology interesting. It appears that very little escapes the watchful eye of international intelligence.

## "Interception Capabilities 2000"

Communications intelligence (Comint) is information derived from foreign communications by other than the intended recipient. In other words covert surveillance or spying. The report says that Comint has become a large-scale industrial activity employing many workers who sift through high capacity civil telecommunications systems using high degrees of automation.

The traditional targets have been military messages and diplomatic communications between foreign countries. Also targeted, following the growth of world trade, is economic intelligence about technical and scientific developments. More recent targets include narcotics trafficking, money laundering, terrorism and organized crime.

### The UKUSA agreement

The United States Sigint (Signal Intelligence) unit consists of the NSA (National Security Agency), the Central Security Service (military support units) and parts of the CIA (Central Intelligence Agency.) Following wartime collaboration, the UK and the US made a secret agreement in 1947 to continue to conduct collaborative global Comint activities. Canada, Australia and New Zealand later joined the UKUSA alliance.

The existence of the UKUSA agreement was not acknowledged until 1999 when the Australian government let the cat out of the bag by divulging that its Defense Signals Directorate (DSD) cooperated with counterpart signals intelligence agencies overseas under the UKUSA relationship.

Besides UKUSA, there are at least 30 other nations

intercepting sensitive information. The largest is the Russian FAPSI with 54,000 employees. China has a "substantial" Sigint system, two stations of which are directed at Russia and operate in collaboration with the United States. Most Middle Eastern and Asian nations - in particular Israel, India and Pakistan - have large communications intelligence agencies.

### Collection, processing, production and dissemination

Communications intelligence collection includes acquiring the intercepted information and passing the data downstream to human analysts, who may be a continent away, for processing and production. Processing is the conversion of the collected information into a form suitable for analysis. Production involves the evaluation and interpretation of raw intercepted data into finished intelligence. Dissemination is the passing of the decrypted or translated intelligence to the appropriate party.

Once targets have been selected, the collection process is determined based on the type of information required, the susceptibility of the targeted activity to collection and the likelihood of collection. This task was simple years ago when refracted long range (HF) radio communications were easily intercepted. From 1940 to 1980, both NSA and the GCHQ (Government Communications Headquarters, its British counterpart) operated HF radio interception.

Today's modern communications systems, however, require unusual, expensive or intrusive methods to gain access. For example, inter-city microwave radio-relay systems, international satellite links and fiber optic subsea cables carry mixed television, telephone, fax, data links, private voice and data. They are all monitored.

Intelligence data including telemetry, VHF/UHF radio, cellular mobile phones, paging signals, mobile data and microwave radio are collected by Comint satellites which cost around \$1 billion each. "...the United States can if it chooses, direct space collection systems to intercept mobile communications signals and microwave city-to-city traffic, anywhere on the planet." While no other nation has the sophisticated satellite intelligence collection capability of the United States, some other nations do have Comint satellites. For example, Russia's FAPSI operates a large ground collection site in Cuba and Vietnam.

Communications from undersea cables can be "tapped" by wrapping coils around the cable using remotely controlled drones. "The United States is the only naval power known to have deployed deep-sea technology for this purpose." Optical fiber cables do not leak RF signals and cannot be tapped using inductive loops. "NSA and other Comint agencies have spent a great deal of money on research into tapping optical fibers, reportedly with little success."



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## Intercepting the Internet

Since 1990, almost all communications have been high-capacity digital. The highest capacity systems in general use for the Internet operate at a data rate of 155 MBs - the equivalent of sending 3 million words every second.

The dramatic growth in the size and significance of the Internet does not really pose a challenge for intelligence agencies. "Since the early 1990's, fast and sophisticated Comint systems have been developed to collect, filter and analyze the forms of fast digital communications used by the Internet."

Most of the world's Internet capacity lies within or connects to the United States. Thus a large proportion of international Internet communications passes through the U.S. and is readily accessible to NSA. Internet packets are inherently easy to identify as to sender, recipient and country since they include numbers representing both their site origin and destination, called "IP addresses."

"Unless special warrants are issued, NSA is normally legally restricted to looking only at communications that start or finish in a foreign country." NSA employs "bots" (robots) to collect non-verbal data of interest. This global surveillance system run by the military-intelligence community is code-named ECHELON.

The system attempts to capture staggering volumes of satellite, microwave, private phone calls, Internet, cellular, fax, telex and fiber-optic traffic, including communications to and from North America. This vast quantity of voice and data communications are then processed through sophisticated filtering technologies, including "voiceprint" speaker identification and optical character recognition systems, which look for code words or phrases.

New evidence shows that this computer "sifting" of intercepted communications has existed for more than 20 years. The need for such a system became apparent when the quantity of messages intercepted far outstripped NSA and CIA capability to examine them.

According to a former employee, NSA had by 1995 installed "packet sniffer" software to collect foreign Internet intelligence traffic including e-mail, file transfers and "virtual private networks" operated over the Internet.

The key component of the system are "Dictionary" computers which store information on specified targets. They pick out key words and hunt out hundreds of individuals and corporations. Their presence has been confirmed in Canada, Australia, New Zealand and England. The U.S. operates ECHELON sites at Sugar Grove, WV (250 miles southwest of Washington in a remote area of the Shenandoah Mountains) and at Sabana Seca, Puerto Rico.

A conversation or document which matches a dictionary entry is flagged by the system and then automati-

cally forwarded to the respective intelligence agency headquarters that requested the communication.

Receiving information from these systems is similar to using a search engine which select web pages containing key words or terms. The forwarding function of the "Dictionary" can be compared to e-mail.

Where access to signals is not possible, Comint agencies have constructed special purpose interception equipment in foreign embassies and other diplomatic premises. A joint NSA/CIA "Special Collection Service" manufactures equipment and trains personnel for covert collection.

The intelligence community is very concerned about the difficulty of future information gathering. The shift in telecommunications to high capacity optical fiber networks requires access to the cables for interception. And the war against readable commercially-available cryptography appears lost. *[Published by the European Parliament Directorate General for Research, Luxembourg.]*

■ **ECHELON is indeed the most powerful intelligence gathering tool in the world.** It gathers "billions of messages per hour." There is no question that it is a formidable means for fighting corruption, organized crime and terrorism. The United States government has gone to extreme lengths to keep ECHELON a secret. To this day, they refuse to admit that ECHELON even exists.

The release of the STOA report sparked a firestorm of controversy in Europe! The European Parliament said it believed the American-led ECHELON posed a threat to privacy and civil liberties. It further believes the need to protect national security is not ECHELON's only concern and that industrial espionage has become a part of ECHELON's activities.

The French government has launched an official investigation into the possibility that information has been given to American companies in an attempt to gain an advantage over rival firms. And both the Italian and Danish governments have begun separate investigations of Echelon's intelligence-gathering efforts.

Wiretapping under Title 18 of the criminal code can only be accomplished under court order. ECHELON may involve the interception of communications involving Americans in the United States without a court order. The American Civil Liberties Union has asked Congress to hold a hearing on ECHELON.

The massive surveillance system operates with little oversight and members of the House Select Committee on Intelligence want to know the legal basis for NSA's ECHELON activities. In particular, the Committee wants to know if the communications of Americans were being intercepted and under what authority.

The ACLU has constructed a website called "Echelon Watch" dedicated to keeping tabs on the surveillance technique at <http://www.aclu.org/echelonwatch/>.